

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5:

C07D 501/20, 501/18, 463/00 A61K 31/545, 31/435

(11) International Publication Number:

WO 92/01696

A1

(43) International Publication Date:

6 February 1992 (06.02.92)

(21) International Application Number:

PCT/GB91/01228

(22) International Filing Date:

22 July 1991 (22.07.91)

(30) Priority data:

9016189.4 9109540.6 24 July 1990 (24.07.90) 2 May 1991 (02.05.91) GB GB

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(81) Designated States: AT (European patent), AU, BE (European patent), CA, CH (European patent), CS, DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), GR (European patent), HU, IT (European patent), JP, KR, LU (European patent), NL (European patent), NO, PL, SE (European patent), US.

Published

amendments.

With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of

(54) Title: CEPHALOSPORINS AND HOMOLOGUES, PREPARATIONS AND PHARMACEUTICAL COMPOSITIONS

$$R^{2}NH$$
 R^{1}
 R^{1}
 R^{1}
 R^{2}
 R^{2}

(57) Abstract

 β -Lactam antibiotics of formula (I) or a salt thereof, wherein R^1 is hydrogen, methoxy or formamido; R^2 is an acyl group; CO_2R^3 is a carboxy group or a carboxylate anion, or R^3 is a readily removable carboxy protecting group; R^4 represents up to four substituents; X is S, SO, SO_2 , O or CH_2 ; m is 1 or 2; and n is 0, useful in the treatment of bacterial infections in humans and animals.